hand, whoever receives the bearer with kindness, shall be rewarded with abundant harvests, and increase of subjects, and whithersoever he may go and settle, prosperity shall attend him, whether on the coast of the Island of *Púlo Pércha* or any other place by sea or by land.

Oh Lord of lords and Helper of helpers, the most wise God."

II.—*Comparison of the Heights of the Barometer, with the Distance of the Moon from the Celestial Equator. By the Rev.* R. EVEREST.

[See Proceedings of the Asiatic Society, 6th May, 1835.]

In my last paper, I shewed, that on an average of ten rainy seasons, the daily amount of Rain-fall diminished, as the declination of the moon increased, until it reached between 10° and 15°; but that after that distance, the reverse took place, and the amount of Rain-fall increased as the declination increased. The general average of the 10 years for every 5° distance from the Equator gave the following results:

Declination   0° 5° 10° 15° 20° 25°   from the Equator.
Inches of Rain ·321 ·271 ·256 ·259 ·347
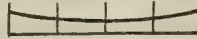
It was but natural to suppose, that the height of the Barometer would vary in a similar manner, or rather the reverse, i. e. as the one increased, the other would diminish, and vice versâ—with this expectation, I made a Table of the heights of the Barometer, as I had before done of the Rain-fall. The 4 P. M. observations were selected from the Registers, as being nearest the time of noon at Greenwich, when the declination of the moon was taken; but I did not at first obtain results so satisfactory as I had expected. On taking the general average of the 10 years, a considerable depression (as much as ·040 in.) appeared, when the declination was greater than 20°; but from that to the equator, the heights were irregular, and nearly on a level. But in examining the Registers, for the purpose of making out the tables, I could not help observing, that though all the greatest depressions coincided (or nearly so) with the times of the moon's maximum declination, yet that many of the greatest elevations held a similar situation. The inference of course was, that a principle of compensation was somehow or other at work. I now became acquainted with the opinion of an eminent philosopher, that any elevation of the barometer in southern latitudes must have the effect of producing an equal depression in a corresponding northern latitude. If we only generalize this assertion a little, and say, " that any de-

pression in any particular spot must have the effect of producing an elevation somewhere else," then, we may see why in any one place (taking the year throughout) the maximum elevations and minimum depressions on the same days of the moon's courses coincide, &c. But it is straying from the subject, to attempt to reason upon phenomena, while we are as yet only in the threshold of our inquiry.

In pursuance of the idea I have above mentioned, I next took the maximum elevation that occurred in each successive division of 5° of the moon's distance from the equator in each year, and then took the general average of the whole 10 years. I did the same with the minima, and obtained the following General Average.

Declination	20°	15°	10°	5°	0° Equator.
Bar. max. inches	30·032	·033	·026	·026	·022
Do. minima, ..	29·236	·313	·355	·379	·375

These two series of numbers would very nearly form two curves, with their convex surfaces to each other, thus :
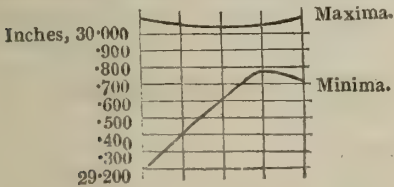
[We are sorry to perceive that the diagram which was copied from the rough sketch in the MS. without advertence to the text, does not faithfully represent the figured statement; but the author's intention will be easily understood.—ED.]

I will now leave this part of my subject, as I shortly expect some further Registers and Nautical Almanacks for comparison, and I will hereafter revert to it more in detail, and make out a Table more at length, shewing the results of each year. I have brought it forward now somewhat prematurely, because from sickness and consequent removal from home, my labours must be suspended for some months, and I am desirous before that happens, to bring forward the following note, which I humbly hope may not be without its use to a large and important class of the community. This was the end which I proposed to myself in commencing a long and laborious investigation, and, if I attain it, in any degree, my purpose will have been more or less answered.

NOTE.

Shewing, that the greatest depressions of the Barometer do not, (as some have conjectured,) coincide with the days of conjunction and opposition of the moon, neither with the days of her perigee, but that they coincide, or nearly so, with the days of her maximum monthly declination.

For Example.

In the ten* years of which the barometrical daily changes have been re-

* The ten years alluded to are : 1823, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834.

gistered at Calcutta, there are (6) *six* instances in which the barometer has fallen below the height of 29·200 inches.—I here add the dates of each instance, with the heights of barometer and declination of moon three days before, and three days after; also the day of nearest new or full moon. The hour of 4 P. M. has been chosen, as corresponding better than any other to the hour of noon at Greenwich, at which time the declination of the moon was taken.

1823. August. 5th, noon, Perigee. 6th, nearest.	Bar. 4 P. M.	Inches. Rain.	Moon's Dec.	*Note.*—The real max. on 15th, at midnight, 26° 16′.
			o ′	
12th,	29·321	..	18 29 S.	
13th,	·313	..	22 8	
14th,	·276	..	24 41	
15th,	·180	0·52	26 3	
16th,	·388	3·32	26 12	
17th,	..	2·56	25 9	
18th,	·526	3·00	22 59	

1829. June, 21st, noon, Perigee. 30 days, 16 hours, new moon.

			o ′
27th,	29·185	6·20	14 13 N.
28th,	·407	..	16 34
29th,	·491	..	18 0
30th,	·474	..	18 27
July. 1st,	·454	0·16	17 55

18th, midnight, Perigee.
30 days, 5 hours, new moon.

26th,	29·421	..	17 36 N.
27th,	·382	..	18 20
28th,	·298	0·72	18 6
29th,	·159	0·28	17 0
30th,	·301	0·58	15 6
31st,	·445	0·15	12 33

The declination at noon, 27th, is, 18° 20′ 5″, and the declination, 27th, at midnight, is, 18° 20′ 22″, so that the real maximum is within 1 day, 12 hours of the depression of Barometer.

1833. May, 24th, noon, Perigee. 19 days, 1 hour, new moon.

	Barometer.	Rain.	Moon's Dec.
19th,	29·500	..	15 49 N.
20th,	·376	0·98	19 11
21st,	28·868	2·90	21 30
22nd,	29·300	5·34	22 32
23rd,	·425	..	22 7
24th,	·340	..	20 7

The real maximum declination is 22 days, 6 hours, Greenwich time.

1830. May, 20th, midnight, Perigee. 21 days, 19 hours, new moon.

	Barometer. 4 P. M.	Rain. Inches.	Moon's Declination.
21st,	29·452	..	13° 5′ N.
22nd,	·514	..	16 4
23rd,	·487	..	17 56
24th,	·427	0·10	18 36*
25th,	·306	3·00	18 7
26th,	·107	4·22	16 36
27th,	·434	..	14 15
28th,	·444	..	11 18
29th,	·521	..	7 55

Note.—The greatest depression of barometer occurred at noon on the 26th,

when it stood at 29·008, and reducing this to the level of 4 P. M., by subtracting (·087), the average monthly difference between noon and 4 P. M., there is left 28·921 inches for the theoretical height of Barometer at that time. Noon 26th is, of course, by Greenwich time, 25 days, 18 hours, nearly.

1834. August 7th, midnight, Perigee. 4 days, 18 hours, new moon.

	Barometer.	Rain.	Moon's Dec.
1st	29·178	..	22° 40′ N.
2nd,	·110	2·20	24 6
3rd,	28·820	4·10	24 11
4th,	29·344	0·70	22 47
5th,	·368	..	19 55

The real maximum is on the 2nd, nearly at midnight, or 2 days, 13 hours, Greenwich time.

The Perigee is evidently out of the question. The comparison between the time of conjunction, and that of moon's maximum declination, with the barometric minimum, may be more clearly stated in a table, shewing the distance of each of the former in days and quarters of days from the latter, thus:

	Distance of				
Time of moon's maximum declination.	Days.	Qrs.	Days.	Qrs.	Time of new moon.
1823, Aug. 15th,	0	2	7	0	From the nearest barometric minimum.
1829, June 27th,	3	0	3	3	
1829, July 29th,	1	2	1	1	
1830, May 26th,	1	3	4	0	
1833, May 21st,	1	1	2	0	
1834, Aug. 3rd,	0	2	1	3	

Making the same allowance as is done in the case of the tides, viz. three days before, or three days after the event, for a coincidence; all these instances of moon's maximum declination may be considered as coincidences with their respective barometric depressions: it is evident, that the times of conjunction cannot be so considered. We must observe that the only instance of great separation between the time of moon's maximum declination and the barometric depression, was in 1829, when the maximum declination of moon was at its least (not above 18° 20′), and consequently only faintly felt.

It now only remains for us to notice the minor barometric depressions, which have occurred during the same period, and we will first take the minima of the years which were above 29·200 inches. From the increase of rain, which occurs when the moon gets within 10 degrees of the equator, we might have supposed that the next lowest depressions would probably be found there—and this turns out to be the case. I here subjoin the details.

1827. June.	Barometer. 4 P. M.	Rain. Inches.	Moon's Declination.
28th,	29·314	..	9 40 N.
29th,	·222	4·40	5 45
30th,	·207	3·72	1 31 N.
July. 1st,	·390	0·38	2 51 S.

Nearest new moon, June, 23 days, 22 hours; say 24 days, or 7 days' distance from the depression.

1832. October.	Barometer. 4 P. M.	Rain. Inches.	Moon's Declination.
5th,	29·763	..	15 51 S.
6th,	·688	1·71	12 31
7th,	·201	3·54	8 34
8th,	·696	1·65	4 11 S.
9th,	·697	..	0 28 N.

Nearest full moon, 9 days, 7 hours ; or 2 days, 7 hours' distance from the depression.

The minimum depressions of the remaining years are still higher, and irregularly placed with regard to the moon's declination, as follows :

1826. July.	Barometer. 4 P. M.	Rain.	Moon's Declination.
27th,...........................	29·317	..	16 40 N.
28th,...........................	·290	..	19 5
29th,...........................	·313	0·06	20 41
30th,...........................	·361	1·08	21 22
31st,...........................	·487	..	21 3

Nearest new moon, August, 3 days, 7 hours ; or 6 days, 7 hours' distance from the depression.

1828. July.	Barometer. 4 P. M.	Rain.	Moon's Declination.
21st,...........................	29·373	1·07	14 17 S.
22nd,...........................	·352	0·12	16 47
23rd,...........................	·352	0·08	18 22
24th,...........................	·394	0·84	18 48
25th,...........................	·451	0·78	17 58

Nearest full moon, 26 days, 10 hours ; or 3 days, 10 hours' distance from the depression.

1831. July.	Barometer.	Rain.	Moon's Declination.
22nd,...........................	29·496	0·12	19 26 S.
23rd,...........................	·492	..	19 31
24th,...........................	·546	1·35	18 40
25th,...........................	·451	..	16 55
26th,...........................	·379	0·38	14 19
27th,...........................	·291	..	11 0
28th,...........................	·302	0·25	7 6

Maximum declination, 4 days' distance from depression.

Nearest full moon, 24° 9′, or nearly 2½ days, distance from depression.

There are yet some further minor depressions, which we must not omit, as though they are not the minima of any particular years, they are much lower than some of those we have been considering. I subjoin the details of all under 29·300 inches.

1823. June.	Bar.	Rain.	Moon's Decl. ° ′		1823. July.	Bar.	Rain.	Moon's Decl. ° ′
8th, ..	29·403	Unknown,	25 47 S.		16th,..	29·282	Unknown.	19 43 S.
9th, ..	·430	..	26 12		17th,..	·255	..	23 0
10th, ..	·359	..	24 41		18th,..	·311	..	25 13
11th, ..	·267	..	21 25		19th,..	·353	..	26 15
12th, ..	·274	..	16 48		20th,..	·355	..	26 4

Nearest new moon, 8th.   Full moon, 22nd.

1827. June.	Bar.	Moon's Decl. ° ′		1827. July.	Bar.	Moon's Decl. ° ′
17th, ...	29·391	6 18 N.		16th,.............	29·271	12 33
18th, ...	·245	10 12		17th,.............	·259	15 33
19th, ...	·252	13 36		18th,.............	·313	17 49
20th, ...	·404	16 22		19th,.............	·312	19 18
21st, ...	·459	18 25		20th,.............	·331	19 55
22nd, ...	·509	19 39		21st,.............	·396	19 41
23rd, ...	·473	20 2		Rain 1·66.		
24th, ...	·486	19 31				

Declination at time of depression, 10° 12′. Rain, 1·90.

1829. June.	Bar.	Moon's Decl.	1832. July.	Bar.	Moon' Decl.
		° ′			° ′
3rd, ...	·314	18 20	26th, ...	29·360	20 50
4th, ...	29·292	17 28	27th, ...	·302	19 26
5th, ...	·253	15 45	28th, ...	·296	16 39
6th, ...	·494	13 21	29th, ...	·371	12 48
Rain, 2·18.			Rain, 0·87.		

1834. June.	Bar.	Moon's Decl.	1834. July.	Bar.	Moon's Decl.
		° ′			° ′
19th,........ ...	29·287	18 53 S.	24th,............	29·398	11 1 S.
20th,............	·230	22 4	25th, ...	·298	6 22
21st,............	·342	23 53	26th,............	·370	1 32
22nd,............	·418	24 16	Rain 0·75.		
23rd,............	·472	23 15			

Summary of Depressions.   *Remarks.*

6, greatest, ... (all below 29·200.)   In one instance only, 3 days between time of dep. and max. decl.

2, lesser,.. (between 29·200 and 29·220.)   Both within 10° of equator.

10, least, .. (between 29·220 and 29·300.)   Of which, in six instances, the time between maximum declination and depression is not more than two days ; in one instance, three days ; in one instance, moon's declination was less than 10° ; two instances, irregular ; one, 12′ more than 10° from the equator ; one (·291), of four days' distance between time of depression and maximum declination. I must now end this paper, begging permission to resume the subject, as I may find opportunity to do so.

ROBERT EVEREST.

It may not be deemed out of place to notice here the amount of wind and rain, which accompanied each depression. In five cases out of the six, a depth of rain of from 6½ to 9 inches was deposited within three days of the depression. In 1823, no notice is taken of the wind in the Register, but the Kedgeree report states, " light airs" on August 15th, (the day of the depression,) and " hard gales from southward and eastward" on the (16th), the day after. The Gazette laments inundations in the upper parts of Bengal, loss of life, villages swept away, and devastation of the crops. In June, 1829, the Register notes on the day of depression " violent wind all night, with thunder and lightning." In May, 1830, and May, 1833, were violent storms or hurricanes, the effects of which must be yet remembered by most of us. In August, 1834, was a heavy gale of wind. In July, 1829, alone, neither the quantity of wind nor of rain appears to have been great. The former is not noticed, the latter was less than 1·75 inches. We may remark too, that in the first instance alone, viz. that of August 15th, 1823, was the declination of the moon south. The rest have all occurred between the 20th May and 4th August, or from 31 days before the summer solstice, to 44 days after it.

K K